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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/756,977	01/13/2004	Alan D. Kersey	CC-0700	3781

7590 06/14/2005

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EXAMINER

LAU, TUNG S

ART UNIT PAPER NUMBER

2863

DATE MAILED: 06/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/756,977

Applicant(s)

KERSEY ET AL.

Examiner

Tung S. 'Lau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 June 2005.  
2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-29 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date See Office action.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### **Information Disclosure Statement**

1. The information disclosure statement filed 06/01/2005 fails to comply with 37 CFR 1.98 (b)(5) which requires each publication listed an information disclosure statement must be identified by publisher, author (if any), title, relevant pages of the publication date, and place of publication. Item 'viscous Attenuation of Acoustic Waves in Suspensions' lacks a publication date as required by 37 CFR 1.98 (b)(5). It has been placed in the application file, but the information referred to therein has not been considered.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5, 7-15, 17-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Lynnworth (U.S. Patent Application Publication 2004/0011141).

Regarding claim 1:

Lynnworth discloses a method for measuring the flow velocity of a fluid flowing through a conduit the method comprising: providing an array of at least two

ultrasonic sensor units disposed at predetermined locations along a longitudinal axis of the conduit (abstract, fig. 2, unit 20, 32, 30, 22), each sensor unit including an ultrasonic transmitter and an ultrasonic receiver (fig. 2, unit 30, 31, 34), each sensor unit providing a respective signal indicative of a parameter of an ultrasonic signal propagating between each respective ultrasonic transmitter and ultrasonic receiver, processing the transit time signals to define a convective ridge in the k-w plane (page 4, section 0052); and determining the slope of at least a portion of the convective ridge to determine the flow velocity of the fluid (abstract).

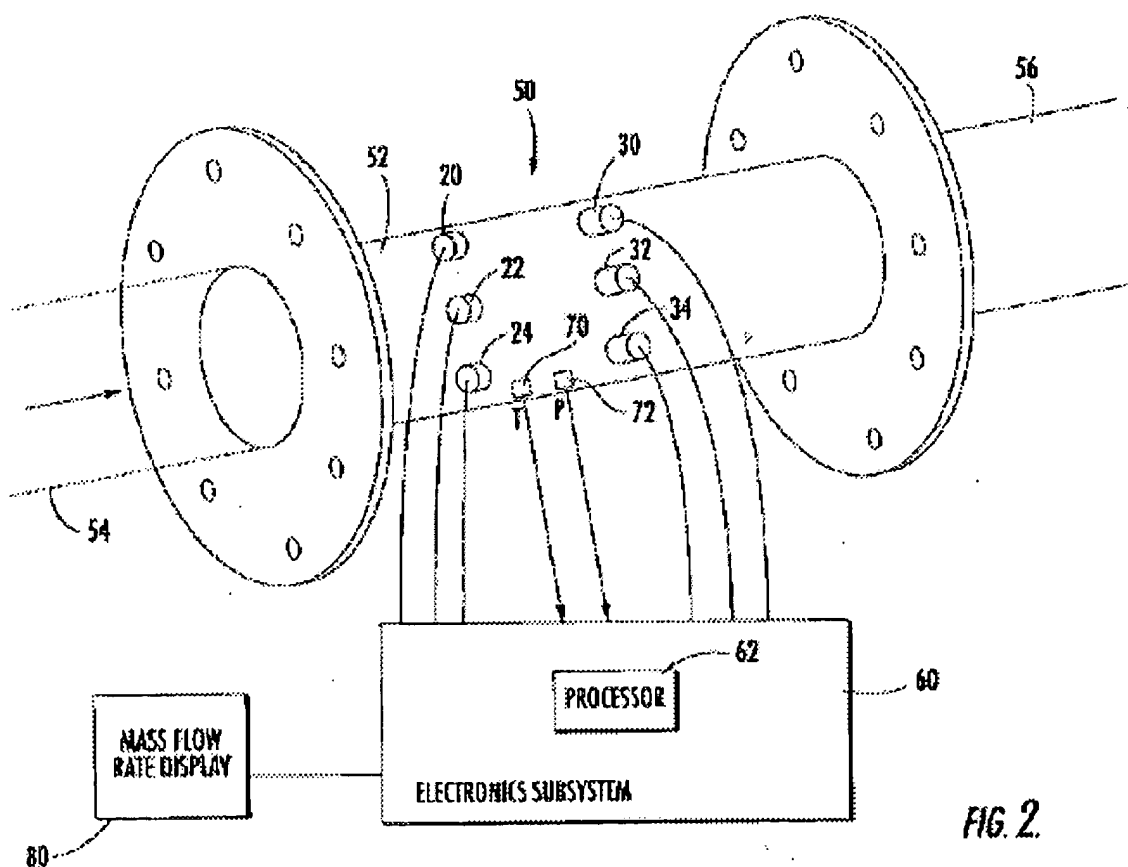


FIG. 2.

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Regarding claim 11:

Lynnworth discloses an apparatus for measuring the flow velocity of a fluid flowing through a conduit (abstract), the apparatus comprising: an array of at least two ultrasonic sensor units disposed at predetermined locations along the conduit, each sensor unit including an ultrasonic transmitter and an ultrasonic receiver, each sensor unit providing a respective signal indicative of a parameter of an ultrasonic signal propagating between each respective ultrasonic transmitter and ultrasonic receiver (fig. 2, unit 20, 32, 30, 22, 20, 22, 24), and a processor that defines a convective ridge in the k-w plane in response to the ultrasonic signals, and determines the slope of at least a portion of the convective ridge to determine the flow velocity of the fluid (fig. 2, unit 60, page 4, section 0052).

Regarding claim 21:

Lynnworth discloses an apparatus for measuring the flow velocity of a fluid flowing through a conduit (abstract), the apparatus comprising: an array of at least two ultrasonic sensor units disposed at predetermined locations along the conduit (fig. 2, unit 20, 32, 30, 22, 20, 22, 24), each sensor unit including an ultrasonic transmitter and an ultrasonic receiver, each sensor unit providing a respective sensor signal indicative of a parameter of an ultrasonic signal propagating between each respective ultrasonic transmitter and ultrasonic receiver (fig. 2, unit 34, 32, 30, 20, 22, 24, abstract); means for processing the sensor signals to define a convective ridge in the k-w plane, and means for

determining the slope of at least a portion of the convective ridge to determine the flow velocity of the fluid (abstract).

Regarding claim 22:

Lynnworth discloses an apparatus for measuring the flow velocity of a fluid flowing through a conduit (abstract), the apparatus comprising: an array of at least three ultrasonic sensor units disposed at predetermined locations along the conduit, each sensor unit including an ultrasonic transmitter and an ultrasonic receiver (fig. 2, unit 22, 20, 24, 30, 32, 34, 72), each sensor unit providing a respective sensor signal indicative of a parameter of an ultrasonic signal propagating between each respective ultrasonic transmitter and ultrasonic receiver (page 4, section 0052, abstract); and a processor using an array processing algorithm determines the flow velocity of the fluid in response to the sensor signals (abstract).

Regarding claim 2, Lynnworth further discloses sampling the transit time signals over a predetermined time period; accumulating the sampled transit time signals over a predetermined sampling period, and processing the sampled transit time signals to define the convective ridge in the k-w plane (fig. 3, 94, 95, 98);

Regarding claims 3, 13, Lynnworth further discloses orientation of the convective ridge k-w plane (page 4, section 0052); Regarding claims 4, 14, Lynnworth further discloses the transit time signals are indicative of vortical disturbances within the fluid (fig. 3, unit 94, 95, 98); Regarding claims 5, 15, Lynnworth further discloses performing a beam forming algorithm (fig. 3, unit 90-100);

Regarding claims 7, 17, Lynnworth further discloses approximating the convective ridge as a straight line (fig. 2, 54); Regarding claims 8, 18, 23, Lynnworth further discloses disposing the ultrasonic transmitter and ultrasonic receiver of a sensor unit such that the ultrasonic signal propagating there between is orthogonal to the direction of the fluid flow (fig. 2, unit 54, 22, 32); Regarding claims 9, 18, Lynnworth further discloses determining the cross-sectional area of the elongated body; and determining the volumetric flow rate of the fluid (fig. 2, unit 20, 22, 24, 30, 32, 34); ); Regarding claim 10, Lynnworth further discloses signal is at least one of the amplitude and the transit time (fig. 3, unit 94, 95, 98); ); Regarding claim 12, Lynnworth further discloses the processor samples the ultrasonic signals over a predetermined time period, accumulates the sampled ultrasonic signals over a predetermined sampling period, and processes the sampled ultrasonic signals to define the convective ridge in the k-w plane (fig. 3, unit 90-100); Regarding claim 19, Lynnworth further discloses the processor further determines the cross-sectional area of the elongated body (page 4, section 0049) , and determines the volumetric flow rate of the fluid (abstract); Regarding claim 20, Yokosawa further discloses the parameter of the ultrasonic signal is at least one of the amplitude and the transit time (fig. 2, unit 92-100); Regarding claims 24, 29, Lynnworth further discloses array of 4 sensor units (fig. 2, unit 20, 22, 30, 32); Regarding claim 25, Lynnworth further discloses sensor are in contact the fluid (abstract); Regarding claim 26, Lynnworth further discloses single phase fluid (fig. 1, unit 40); Regarding claim

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27, Lynnworth further discloses pith-catch configuration are mounted opposite each other (fig. 2, unit 20, 30); Regarding claim 28, Lynnworth further discloses Pulse echo configuration (fig. 2, unit 20, 30).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

a. Claims 6 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lynnworth (U.S. Patent Application Publication 2004/0011141) in view of Gysling (U.S. Patent 6,609,069)

Lynnworth discloses a method and apparatus including the subject matter discussed above except using Capon Algorithm; Gysling discloses using Capon Algorithm in order to have accurate estimate results (Col. 6, Lines 38-46).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Lynnworth to have the Capon Algorithm taught by Gysling in order to have accurate estimate results (Col. 6, Lines 38-46).

***Response to Arguments***

4. Applicant's arguments with respect to claims invention have been considered but are moot in view of the new ground(s) of rejection. However, applicant's



arguments filed 06/01/2005 have been fully considered but they are not persuasive.

### Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung S Lau whose telephone number is 571-272-2274. The examiner can normally be reached on M-F 9-5:30. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on 571-272-2269. The fax phone numbers for the organization where this application or proceeding is assigned is 703-872-9306

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TL



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